ECOLOGICAL SURVEY REPORT
AMERICAN CANYON CANDIDATE RESEARCH NATURAL AREA
LOS PADRES NATIONAL FOREST, SANTA LUCIA RANGER DISTRICT
SAN LUIS OBISPO COUNTY, CALIFORNIA

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INTRODUCTION

PHYSICAL DESCRIPTION OF THE cRNA

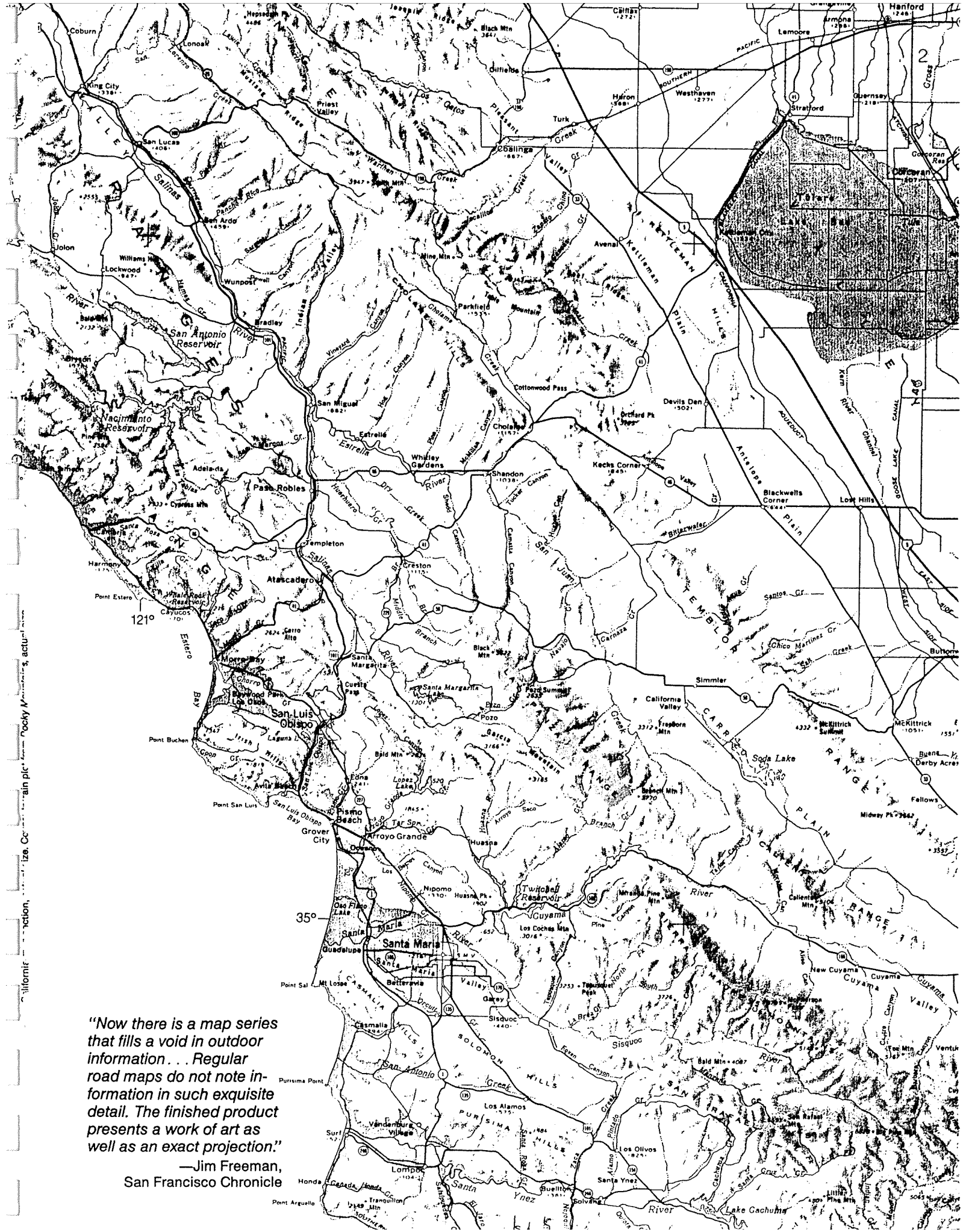
The American Canyon cRNA is located in the La Panza Range, one of the inner coast ranges of northeastern San Luis Obispo County. Situated within the northwestern margin of the Machesna Mountain Wilderness, it contains approximately 1,500 acres (607.3 hectares) and is the uppermost watershed of American Canyon, one of the ultimate sources of the Salinas River. Its upper limit is the long, curved summit of Pine Mountain. It straddles the Pozo Summit and La Panza USGS 7.5 minute quadrangles and occupies Sections 9 and 10, and portions of Sections 14, 15, 16, and 23, T. 30S., R. 16E. The soil is mostly arkosic (feldspar-bearing) sandstone and elevations range from about 2,800 feet (854 meters) to 3,782 feet (1,153 meters).

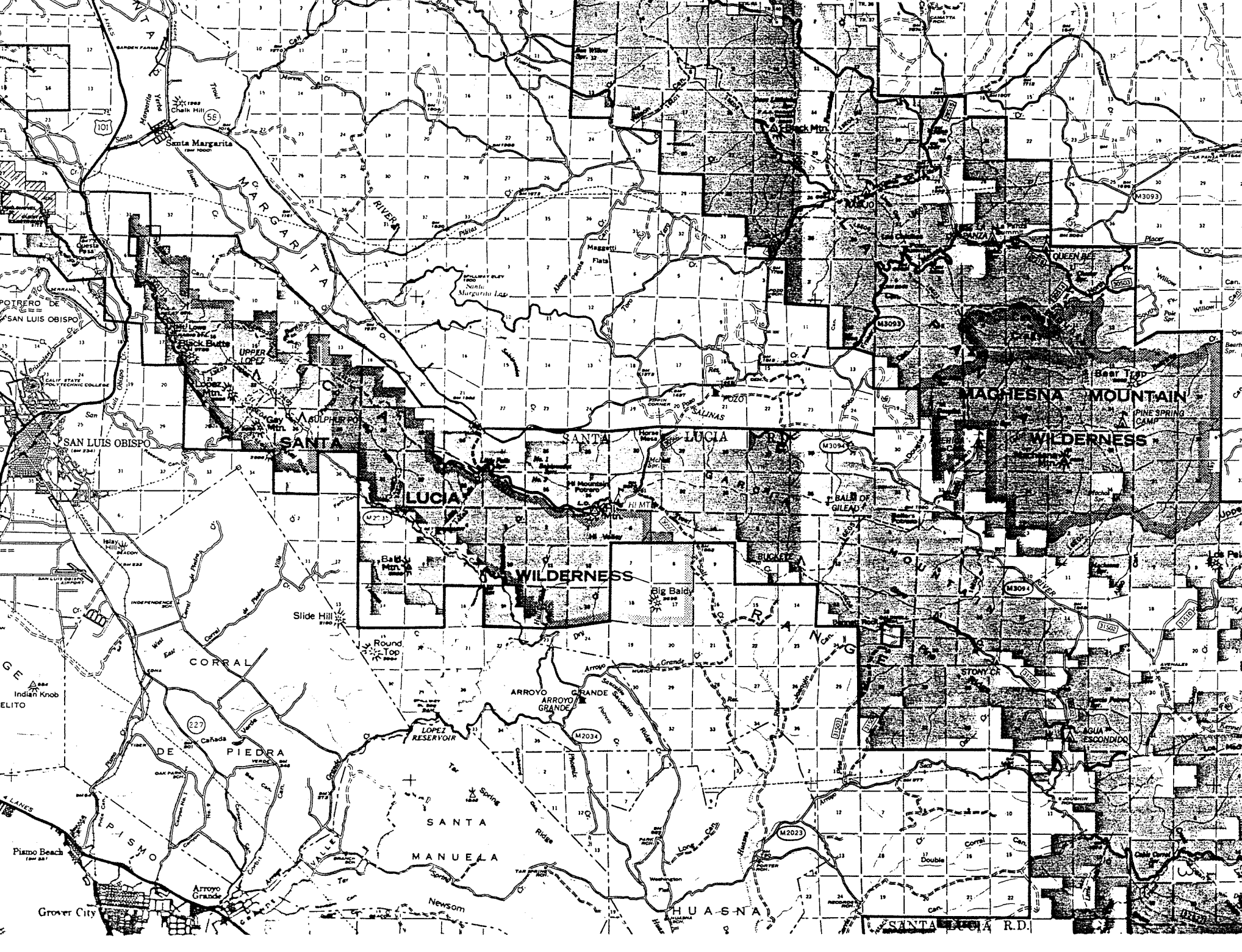
RECOMMENDATION: To distinguish from the better-known and more accessible American Canyon Camp to the southwest, which does not give practical access to the cRNA, the cRNA should be designated Upper American Canyon. (Presumably "Pine Mountain", which would also be appropriate, is repeated in too many other places to be a distinctive name.)

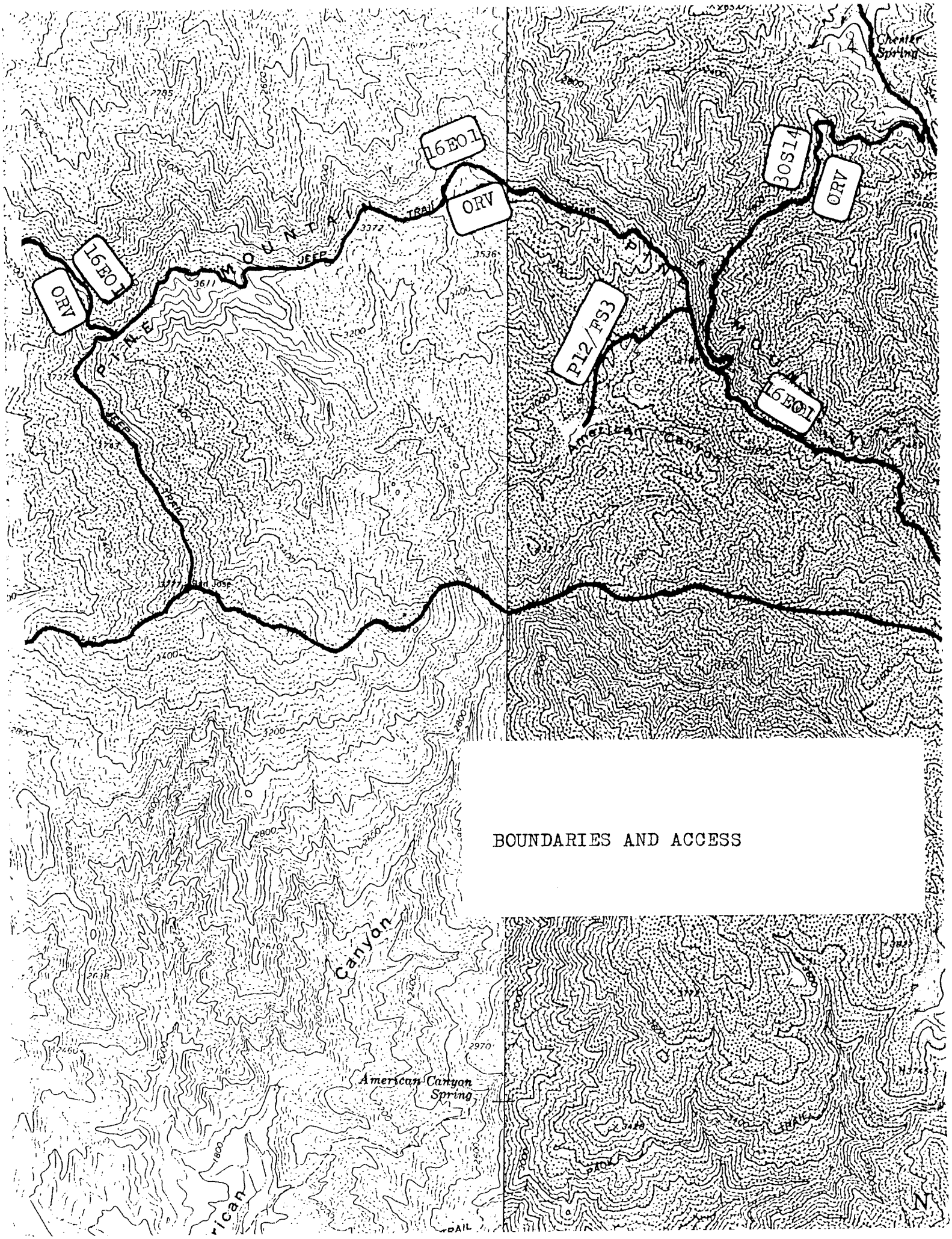
ACCESS AND BOUNDARIES

Access is via jeep trail 16E01 from the northwest at Pozo Summit (passable only to 2 wheels or 2 feet) or via 4-wheel drive road 30S14 from the northeast near Queen Bee camp and Chester Spring. The northern perimeter connecting these two accesses is a designated ORV road (16E01). This road 16E01 continues southeast of road 30S14 as a foot and horse trail into the Machesna Mountain Wilderness, where it is sometimes trespassed by 2-wheeled vehicles. A gated and overgrown former road (now a trail) runs to the south and west of the northwest corner of the cRNA. Ridge roads and ridge trails thus define the west, north, and east boundaries of the cRNA; the southern edge is more loosely defined by side watersheds within a few hours' hike from vehicle access. Using the best access, from Chester Spring via road 30S14, one reaches the edge of the cRNA an hour and a half after leaving Paso Robles or about an hour from San Luis Obispo. A former bulldozer trail (P12/FS3), becoming overgrown, leads from near the head of road 30S14 down into the basin and gives foot access to the potreros and riparian corridor.

RECOMMENDATION: A watershed is a minimum viable ecological unit, therefore the boundaries as planned are good ones. However some minor additions could be made. There are some interesting small dense stands of Coulter Pine (i.e. suppressing the chaparral understory) along the ridge on the "other" side of the road that defines the wilderness boundary. It might be desirable to extend the cRNA 100-200 yards beyond the topographic watershed boundary, outside the ridgeline, regardless of roads or wilderness boundary


Coburn
King City
San Lucas
Jolon
Lockwood
Bradley
San Antonio Reservoir
Nacimiento Reservoir
Paso Robles
Templeton
Atascadero
Harmony
Point Estero
Morro Bay
Cayucos
San Luis Obispo
Point Buchon
Point San Luis
Pismo Beach
Grover City
Arroyo Grande
Nipomo
Oso Flaco Lake
Santa Maria
Guadelupe
Point Sal
Casmalia
Purisima Point
Vandenburg Village
Lompoc
Point Arguello
San Miguel
Shandon
Whitley Gardens
Creston
Cholame
Parkfield
Priest Valley
Coalinga
Black Mtn
Mine Mtn
Cottonwood Pass
Avenal
Kettleman Plain
Kettleman Hills
Keck's Corner
Blackwells Corner
Lost Hills
Devils Den
Orchard Pk
Buttonwillow
Taft
Maricopa
Harford
Lemoore
Armona
Stratford
Guernsey
Corcoran
Officeran
Tulare Lake
Pacific
Southern
Santa Lucia Range
Temblor Range
Carrizo Plain
Caliente Range
Cuyama Valley
Twitchell Reservoir
Cuyama
New Cuyama
Sisquoc
Solomon Hills
Casmalia Hills
Purisima Hills
San Rafael Mts
Los Olivos
Santa Ynez
Buellton
Solvang
Lake Cachuma
Simmler
California Valley
Soda Lake
Fellows
Midway Pk
Derby Acres
McKittrick
McKittrick Summit
Pozo
Pozo Summit
Santa Margarita
Cuesta Pass
Bald Mtn
Edna
Lopez Lake
Huasna
Tar Spr
Twin Lakes
Los Berros
Los Flores
Tepusquet Peak
Los Coches Mtn
Bald Mtn
Los Alamos
Zaca Lake
Foxen Canyon
Tranquillon Mtn
Honda
Surf
Point Sal
Mt Losee
Betteravia
Garey
Orcutt
Los Flores
Nipomo
Huasna Pk
Twin Peaks
Pine Mtn
Caliente Mtn
Branch Mtn
Freeborn Mtn
Chico Martinez Cr


Santa Margarita
Chalk Hill
Black Mtn.
MARGARITA
RIVER
Santa Margarita Lake
POTRERO DE
SAN LUIS OBISPO
Black Butte
UPPER LOPEZ
CANYON
Lopez Mtn.
Gay Mtn.
SULPHUR PO
SAN LUIS OBISPO
SANTA
LUCIA
SANTA LUCIA R.D.
Hi Mountain Potrero
Hi Mtn.
Hi Valley
Bald Mtn.
WILDERNESS
Big Baldy
Slide Hill
Round Top
CORRAL
DE PIEDRA
Indian Knob
ELITO
Cañada Verde
LOPEZ RESERVOIR
ARROYO GRANDE
Arroyo Grande
Spring
SANTA MANUELA
Pismo Beach
PISMO
VALLEY
Grover City
Newsom
HUASNA
Bear Trap
MACHESNA MOUNTAIN
PINE SPRING CAMP
WILDERNESS
BALM OF GILEAD
Los Pa
STONY CR
AGUA ESCONDIDO
Double
Corral Can.
M3093
M3094
M2034
M2023
227
101
56



BOUNDARIES AND ACCESS

so that one might study ridgetop phenomena such as pine stands, plants and animals on both sides of the road. Also, the disturbance associated with maintaining the ridge road gives rise to repeated localized short-term diversity and early successional vegetation, which are in themselves worthy of inclusion in the cRNA. A number of early-succession native species are found only in disturbed areas of the Coulter Pine/Chaparral.

It would likewise be logical to extend the RNA on both sides of trail 16E01 to encompass all of the easternmost Blue Oak savanna.

ECOLOGICAL DESCRIPTION OF THE cRNA

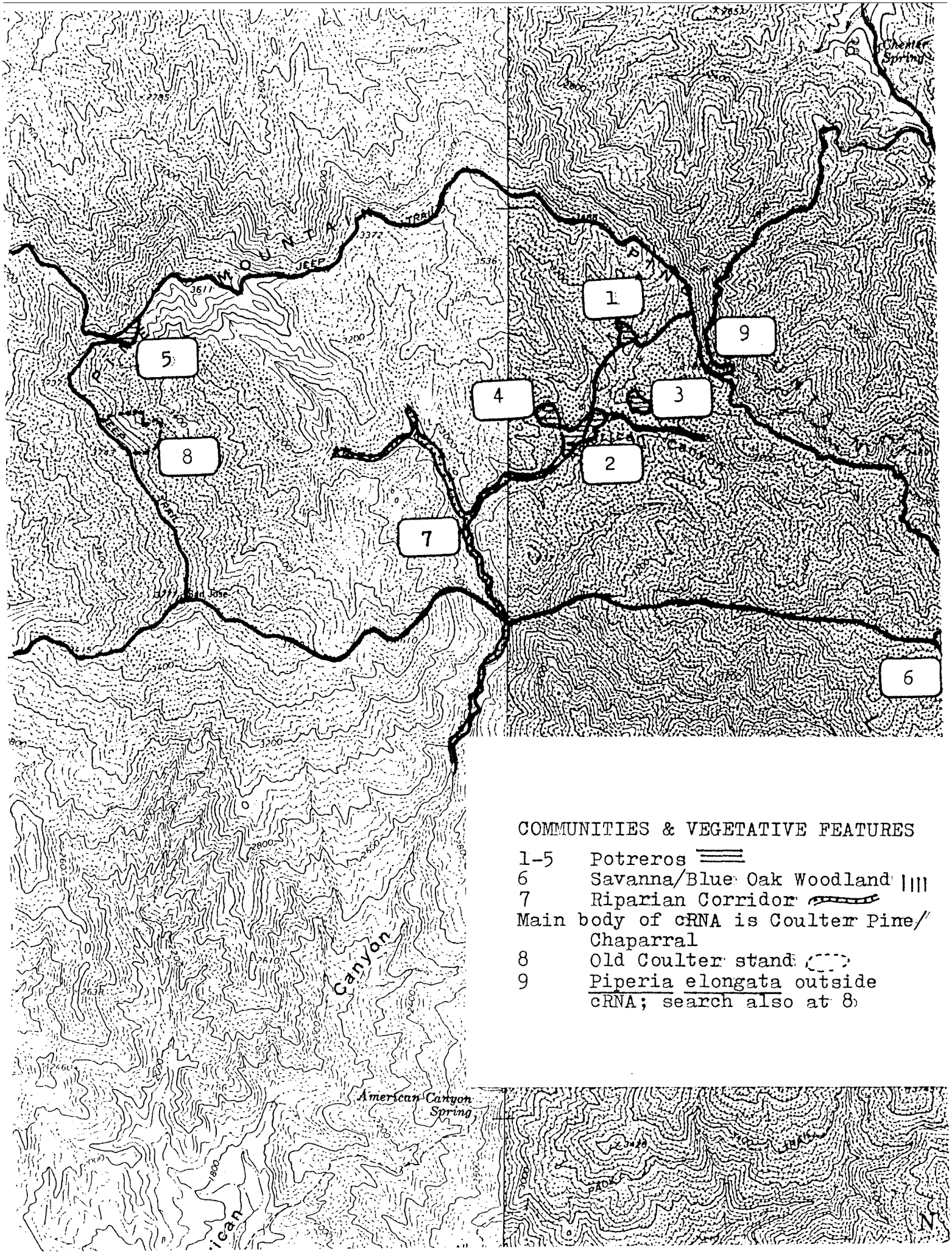
VEGETATION

The dominant vegetation in the cRNA is a sparse Coulter Pine (Pinus coulteri) woodland with a mostly impenetrable chaparral understory 1.5-3m. tall. Small potreros are scattered on the south-facing slopes within this woodland/chaparral; an open Blue Oak woodland a little too dense to be savanna straddles the ridgetop; and riparian corridors drain it. The mingling of these communities in the more extensive Coulter Pine/Chaparral creates high diversity of plant species.

Coulter Pine/Chaparral is the target community for this cRNA. Coulter Pine is widely distributed in the Peninsular and Transverse Ranges of Southern California and in the Coast Ranges from San Francisco Bay south (Griffin and Critchfield 1972). Chaparral is one of the most widespread plant communities in California. The combination of Coulter Pine with chaparral is not particularly unusual, occupying 55% of the highly fragmented Coulter Pine stands in the Los Padres Forest north of Santa Barbara and south of Santa Margarita (Borchert 1985). The combination is more frequent in the southern Coulter Pine stands. It is not rarity that would cause this area to be designated a Research Natural Area, though rare species of plants and of at least one insect are present. Rather, Upper American Canyon cRNA is uncommonly undisturbed while enjoying reasonable access for study by university, agency and other personnel. Plant diversity is notably high even though the species list that follows is not exhaustive. Species evenness is low, particularly in the riparian corridors and to a lesser extent in the potreros. This site provides excellent opportunities for ongoing studies of Coulter Pine because the stands within the cRNA are mixed as to age, density, and serotiny. Other possible research topics are suggested below.

PLANT COMMUNITIES

There are four plant communities on the cRNA. Their boundaries are unusually distinct and there is little crossover of plant



COMMUNITIES & VEGETATIVE FEATURES

1-5 Potreros
6 Savanna/Blue Oak Woodland
7 Riparian Corridor
Main body of cRNA is Coulter Pine/ Chaparral
8 Old Coulter stand
9 Piperia elongata outside cRNA; search also at 8

species from one to another.

Name in common usage	R. Holland Type (1986)	Approx. Hectares
Coulter Pine/Chaparral	Coulter Pine Forest with Northern Mixed Chaparral	595 ha. or 98%
Riparian Corridors	Central Coast Live Oak Riparian Forest	6 ha. or approx. 1.0%
Potreros	Valley Needlegrass Grassland	less than 6 ha. & less than 1.0%
Savanna	Blue Oak Woodland	less than .6 ha. & less than 0.1%

Coulter Pine/Chaparral

As introduced above, this is a dual community. It occurs on all slopes, though the predominant slope aspects of the cRNA are variations on south.

The tree story is Coulter Pine that ranges from a few scattered individual trees to dense stands shading out undergrowth; the pine is completely missing from 20-25% of the community as viewed from the air, leaving only the chaparral understory. The chaparral is composed principally of Chamise (Adenostoma fasciculatum) and Manzanita (Arctostaphylos glandulosa) with Big-Berry Manzanita (A. glauca) and Scrub Oaks (Quercus dumosa, Q. wislizenii var. frutescens). There are a sprinkling of Ceanothus cuneatus and C. oliganthus var. sorediatus, and a very few shrubs of C. foliosus and Cercocarpus betuloides (C. montanus var. Blanchae per Hoover (1970)). Pedicularis densiflorus is the most common ground-level plant under the chaparral shrubs though in much of the area there is no vegetation at all under the chaparral; other herbs are thinly scattered within the chaparral and some species occur only in rockier areas of sparse and stunted chaparral.

The Coulter Pine generally fits Holland's Coulter Pine Forest classification though the cRNA is depauperate in other tree species normally associated with Coulter Pine.

Mark Borchert (1985) of the USFS sampled two Coulter Pine stands in the cRNA. The "Pine Mountain" stand is a typical stand along ridge trail 16E01 slightly east of road 30S14, and is on a 45% slope facing west-southwest; it contained 936 trees/ha. with a basal area of 0.1 m2/ha. and a 77% shrub cover. This stand is in an area last burned in 1939 and the bulk of the pines were in the 30-35 year age class. The "Pine Mountain Summit" stand is an unusually old stand located near the western edge of the cRNA. Fires burned portions of this stand in 1921 and 1939 but never killed all of the trees; most still date to the last presumed stand-killing fire in the 1830s. There are pulses of more recent

recruits, but the majority of the pines here were 125-145 years old. This stand is located on a 50% east-facing slope and had 242 trees/ha. with a basal area of 31.4 m2/ha. and a 96% shrub cover.

Coulter Pine is not a true closed-cone pine, but Borchert's 1985 study found a conspicuous range of serotiny in eleven regional stands. All cones in Miranda Canyon (south-southeast of the cRNA and south of the Cuyama River) were open after 4 years. By contrast, in the Pine Mountain stand 52% of cones 6 years or older were closed, giving it the highest degree of serotiny in the stands he sampled.

A few pine saplings can be found in almost any except the densest stands. Individual dead trees are present but not common. There are scattered pockets where all pines are brown (from insect damage?)

The chaparral portion of this community is Holland's Northern Mixed Chaparral with a few species missing. The chaparral cover varies with slope aspect and soil depth. It is predictably densest on north and east facing slopes but thin soil barely mantling the rock substrate may create sparse cover on any slope. Excluding the rock outcrops, the overall chaparral cover ranges from 50% to 98% as determined by releves from numerous sites along the ridgetop. South and west aspects tend toward lower cover (50-80%) and north and east apects tend higher (70-98%)

Most of the chaparral is mature at 50 years of age, having last burned in a 26,550 acre wildfire in 1939. Small portions along the north and northwest margin date from fires in 1921 and 1926 (Unpubl. map on file at USFS office, Goleta).

Riparian Corridors

The riparian corridors are adequately described by Holland's Central Coast Live Oak Riparian Forest community. They are mostly narrow corridors, restricted in width by steep topography which at a short distance puts vegetation above the water table. Shade and greater humidity extend this mesic community up some steep north-facing slopes. Tree-form oaks (Quercus agrifolia, Q. chrysolepis, and full-sized Q. wislizenii) are found here and nowhere else in the cRNA.

For its relatively limited extent, the riparian community is rich in species. Even after some familiarity with the area, it is impossible to travel a new stretch of stream without finding new plant species. One of the most surprising is Calochortus palmeri, unusual in a genus that otherwise inhabits dry locations. This species grows only in or next to the streambed where it is actually in the water table. It appears not to need to dry out each year, but to tolerate drying in occasional dry years. An uncommon plant, it is on the California Native Plant Society's List 4 (Plants of Limited Distribution - A Watch List).

Because this survey was conducted in the second and third years of a drought, representative stream conditions were possibly not encountered. In 1988 the main stream had only some surface water at the potreros but there were pools and slow trickles in the vicinity of the main northwest/northeast fork, with some water consistently though sluggishly flowing downstream from there. In 1989 there was no surface water above this fork. The northwest and southeast forks both had a little water in early July of 1988; neither fork was checked in 1989.

Besides concentrating plant species, the stream corridors concentrate some wildlife. At least one bear uses the streams as literal corridors for repeated journeys, consistently placing his/her feet in the same footprints at every passing. The stream is a water source for birds and for butterflies who sip moisture from damp gravel and sand. Some of the more interesting riparian plant species are Arnica discoidea var. alata, Castilleja stenantha, Centaurium exaltatum (CNPS List 4), Delphinium nudicaule, Heterocodon rariflorum, a Horkelia which can be keyed to H. bolanderi but may be a new species, Leptodactylon californicum, Monardella macrantha, Populus fremontii and P. trichocarpa, Psoralea orbicularis, and Zigadenus venenosus.

Potreros

The potreros are islands of Holland's Valley Needlegrass Grassland, mostly under an acre (0.405ha.) in extent, and are located on old landslides (D. Chipping, pers. comm. June 1989). The largest one flanks the stream at the bottom of trail P12/FS3. Most of the potreros lie between elevations of 2920'and 3000'in an east-central cluster, but one lies alongside the northwest ridge at about 3480'.

The potreros do not entirely fit Holland's classification, being somewhat depauperate in native bunchgrasses and dominated by introduced grasses and forbs, but yet are not so disturbed as to be accurately described by Holland's Non-native Grassland community. Oddly, only the little ridgetop potrero near the western edge of the cRNA contains any Calochortus. Seen in seed only, the species was not identified but may be the C. simulans of the savanna. While only moderate in species diversity for a native grassland community, the potreros contain some of the showiest wildflowers (Clarkia speciosa) plus the uncommon Sidalcea hickmanii (CNPS List 1B) and Malacothamnus niveus (CNPS List 4).

Savanna

At the far southeastern tip of the cRNA is a small savanna-form stand of Blue Oak (Quercus douglasii). It belongs to Holland's broad category of Blue Oak Woodland and to Borchert's (1989 unpublished) more specific Blue Oak/Foxtail Grass - Cut-leaved Geranium ecological type.

This stand occupies a gentle southeast-facing slope at an elevation ranging from 3560' to just over 3700'. The majority of the trees are mature and a few appear quite old; younger trees indicate the stand is apparently regenerating. There are a very few California Junipers here (and in the riparian corridor).

The survey suffered timing problems in this community. The first site visit on Memorial Day weekend of 1988 indicated that April would be a better time to survey vegetation here. A site visit scheduled for April 15, 1989 had to be cancelled when it was learned a motorcycle race had the area closed for that weekend. Diversity within this community appears only moderate, with introduced grasses and forbs conspicuously mingled among the natives. A beautiful mariposa-lily found here is Calochortus simulans (it may also grow in the highest potrero); it is endemic to central San Luis Obispo County and is on CNPS List 4.

As suggested above ("Access and Boundaries"), it would be beneficial to extend the cRNA boundary to include the portions of this community on both sides of trail 16E01.

PRELIMINARY PLANT SPECIES LIST

CPC = Coulter Pine/Chaparral
POT = Potreros
RIP = Riparian Corridor
BOK = Blue Oak Woodland
UNR = unrecorded community
RTE = Rare, Threatened, Endangered, according to California Native Plant Society, 1988. List 1B: Plants Rare, Threatened or Endangered in California and elsewhere; List 4: Plants of Limited Distribution - A Watch List

	CPC	POT	RIP	BOK	UNR	RTE
Achillea millefolium		POT				
Adenostoma fasciculatum	CPC					
Agoseris grandiflora		POT				
Allium lacunosum var. lacunosum						
Allophyllum gilioides			RIP?			
Apocynum cannabinum			RIP			
Arabis glabra		POT				
Arctostaphylos glandulosa	CPC					
Arctostaphylos glauca	CPC					
Arctostaphylos pilosula (type locality)	CPC					1B
Arctostaphylos pungens (few, possibly outside RNA)	CPC					
Arctostaphylos hybrids	CPC					
Arenaria pusilla/californica			RIP	BOK		
Arnica discoidea var. alata			RIP			

Artemisia douglasiana			RIP		
[Artemisia dracunculus]			RIP		
Asclepias fascicularis			RIP		
Astragalus gambellianus		POT			
Avena barbata				BOK	
Avena fatua				BOK	
Bloomeria crocea	CPC			BOK	
Boisduvalia densiflora			RIP		
Brickellia californica			RIP		
Brodiaea pulchella	CPC				
Bromus arenarius		POT			
Bromus diandrus (Bromus rigidus)		POT			
Bromus mollis		POT			
Bromus rubens	CPC				
Calochortus clavatus var. pallidus (Mariposa clavata var. pallida)	CPC				
Calochortus palmeri (Mariposa palmeri)			RIP		4
Calochortus simulans (Mariposa simulans)		POT?		BOK	4
Camissonia contorta	CPC	POT			
Carex serratodens			RIP		
another? Carex			RIP		
Castilleja [affinis]			RIP		
Castilleja foliolosa	CPC				
Castilleja stenantha			RIP		
Ceanothus cuneatus	CPC				
Ceanothus foliosus var. medius	CPC				
Ceanothus oliganthus var. sorediatus	CPC		RIP		
Centaurea melitensis		POT			
Centaurium exaltatum			RIP		4
Cerastium glomeratum			RIP		
Cercocarpus betuloides (C. montanus var. blancheae)	CPC		RIP		
Cheilanthes clevelandii	CPC				
Chlorogalum pomeridianum	CPC	POT			
Chorizanthe clevelandii	CPC	POT			
Chorizanthe staticoides	CPC	POT			
Chrysopsis sp. (not flowering)		POT			
Cirsium californicum		POT			
Clarkia modesta			RIP		
Clarkia purpurea		POT		BOK	
Clarkia purpurea ssp. quadrivulnera		POT			
Clarkia speciosa		POT			
Clarkia unguiculata			RIP		
Clematis lasiantha	CPC		RIP		
Collinsia heterophylla			RIP		
Convolvulus malacophyllus		POT			
Conyza [canadensis]				UNR	
Cryptantha clevelandii	CPC	POT			
Cryptantha sp. (bumpy seeds)	CPC	POT			
Cuscuta californica			RIP		
Datisca glomerata			RIP		
Daucus pusillus		POT			

Delphinium nudicaule		RIP		
Delphinium parryi	POT			
Dendromecon rigida	CPC			
Dodecatheon clevelandii	POT		BOK	
Dryopteris arguta		RIP		
Dudleya cymosa				
Dudleya pulverulenta	CPC			
Elymus [triticoides]	POT			
Elymus [condensatus]		RIP		
Epilobium [minutum]		RIP		
another? Epilobium				
Equisetum laevigatum		RIP		
Equisetum sp.		RIP		
Epipactis gigantea		RIP		
Eriastrum wilcoxii	CPC			
Ericameria cuneata	CPC			
(ridge, immed.outside wilderness)				
Erigeron foliosus	POT			
Eriodictyon tomentosum	CPC	POT		
Eriogonum [elegans]	POT			
Eriogonum elongatum	POT			
Eriogonum fasciculatum		RIP		
Eriophyllum confertiflorum	CPC		BOK	
Erodium cicutarium	POT			
Everlastings - 2				
[Festuca sp.]				UNR
Fremontodendron californicum		RIP		
Galium andrewsii	CPC		BOK	
Galium biflorum		RIP		
Galium Nuttallii		RIP		
Garrya flavescens or congdonii		RIP		
Githopsis specularioides	CPC			
Glycyrrhiza lepidota		RIP		
Gnaphalium palustre	CPC			
Haplopappus [linearifolius]	CPC			
Hazardia squarrosa			BOK	
Heteromeles arbutifolia	CPC	RIP		
Helianthemum scoparium	CPC			
Helianthus gracilentus	CPC			
Hemizonia fasciculata	POT			
Hesperocnide tenella		RIP		
Heterocodon rariflorum		RIP		
Hieracium argutum		RIP		
Holodiscus discolor		RIP		
Hordeum [brachyantherum]	POT			
Hordeum californicum	POT			
Horkelia bolanderi or new sp.		RIP		
Hypochaeris sp.	POT			
Juncus [balticus]		RIP		
Juncus serratodens		RIP		
Juncus xiphioides & viviparous form		RIP		
Juncus/Cyperus - paniculate		RIP		
Juniperus californica		RIP!	BOK	
[Koeleria]				UNR
Lactuca saligna		RIP		

Lactuca seriola			RIP		
Lagophylla ramosissima	CPC	POT		BOK	
Lepechinia calycina	CPC		RIP		
Leptodactylon californicum			RIP		
Lessingia germanorum		POT			
Linanthus androsaceus		POT		BOK	
Linanthus parviflorus		POT		BOK?	
Linanthus pygmaeus		POT			
Lithophragma heterophylla			RIP		
Lomatium dasycarpum		POT		BOK	
Lomatium utriculatum				BOK	
Lonicera hispidula			RIP		
Lonicera subspicata		POT			
Lotus grandiflorus	CPC				
Lotus humistratus				BOK	UNR
Lotus purshianus		POT			
Lotus scoparius	CPC				
Lotus - yellow, flat					
Lupinus [bicolor] (not in flower)		POT		BOK	
Lupinus nanus		POT			
Madia elegans ssp. elegans		POT			
Madia exigua		POT			
Malacothamnus niveus		POT			4
Marah fabaceus	CPC				
Melica imperfecta					
[Melica] - oversize	CPC?				
Microseris lindleyii	CPC				
Microseris/Leontodon/Hedypnois		POT			
Microsteris [gracilis]				BOK	
Mimulus (Diplacus) longiflorus			RIP		
Mimulus cf. fremontii	CPC				
Mimulus guttatus			RIP		
Mimulus pilosus (Mimetanthe pilosa)			RIP		
Mimulus [rattanii]	CPC				
Monardella macrantha			RIP		1B
Monardella villosa		POT	RIP		
Montia perfoliata					UNR
[Muhlenbergia rigens]		POT			
Navarettia atractyloides		POT			
Navarettia mellita	CPC				
Oenothera contorta (See Camissonia)					
Oenothera - minute-flowered					
Orobanche bulbosa	CPC				
Orobanche [fasciculata]				BOK	
Orthocarpus purpurascens		POT			
Orthocarpus sp.			RIP		
Pedicularis densiflorus	CPC				
Pellaea andromedaefolia	CPC		RIP		
Pellaea mucronata	CPC				
Penstemon (Keckiella) cordifolius	CPC		RIP		
Penstemon heterophyllus		POT			
Perezia microcephala	CPC		RIP		
Phacelia egena/imbricata			RIP		
Phacelia malvaefolia/rattanii	CPC				

Phacelia rattanii			RIP		
Phacelia suaveolens	CPC				
Pickeringia montana	CPC				
Pinus coulteri	CPC		(RIP)		
Pityrogramma triangularis			RIP		
Plagiobothrys nothofulvus		POT			
Platystemon californicus		POT			
Plantago erecta		POT			
Platanus racemosa			RIP		
Plectritis sp.				BOK	
Poa scabrella		POT			
Pogogyne serpylloides	CPC		RIP		
Polypodium californicum			RIP		
Polypogon monspeliensis			RIP		
Populus fremontii			RIP		
Populus trichocarpa			RIP		
Potentilla glandulosa			RIP		
Psilocarphus tenellus	CPC				
Psoralea [macrostachya]			RIP		
Psoralea orbicularis			RIP		
Pterostegia drymarioides			RIP		
Quercus agrifolia			RIP		
Quercus chrysolepis			RIP		
Quercus douglasii				BOK	
Quercus dumosa	CPC		RIP		
Quercus wislizenii	CPC		RIP		
Quercus wislizenii var. frutescens	CPC				
Ranunculus hebecarpus		POT			
Rhamnus californica	CPC	POT			
Rhamnus crocea ilicifolia	CPC		RIP		
Rhus diversiloba (Toxicodendron diversilobum)		POT	RIP		
Rhus trilobata	CPC		RIP		
Ribes malvaceum			RIP		
Rosa californica			RIP		
Rubus ursinus/vitifolius/californicus			RIP		
Salvia mellifera	CPC		RIP		
Salvia sonomensis	CPC				
Salix [hindsiana]			RIP		
Salix [lasiolepis]			RIP		
Sambucus mexicana/caerulea	CPC		RIP		
Sanicula bipinnatifida				BOK	
Sanicula crassicaulis		POT			
Scutellaria tuberosa ssp. australis			RIP?		
Senecio astephanus (2 plants inside watershed, outside wilderness)	CPC				
Sidalcea hickmanii		POT			1B
Sisyrinchium bellum		POT?	RIP		
Sitanion hystrix		POT			
Solanum umbelliferum	CPC	POT			
Stephanomeria coronaria		POT			
Stipa coronata	CPC				
Stipa pulchra		POT		BOK	
Symphoricarpos albus var. laevigatus			RIP		
Symphoricarpos mollis			RIP		

[Tauschia] sp.			RIP			
(& immed. outside wilderness on ridge)	CPC					
Thalictrum polycarpum		POT				
Thysanocarpus sp.		POT				
Trichostema lanatum	CPC					
Trifolium albopurpureum		POT				
Trifolium ciliolatum		POT				
Trifolium microcephalum		POT		BOK?		
Trifolium [variegatum]		POT				
Typha [angustifolia]			RIP			
Viola purpurea			RIP?		UNR	
Vulpia sp.		POT				
Zauschneria californica			RIP			
Zigadenus brevibracteatus	CPC	POT				
Zigadenus venenosus			RIP			
Totals	72	75	100	25	6	7

RECOMMENDATION: The current Los Padres National Forest Land and Resource Management Plan (undated) states on page 3-6 that "The Forest needs a comprehensive inventory of individual sensitive species on which to base a systematic management program." The Final Environmental Impact Statement (FEIS) for the Forest Plan also states on page 3-11 that "There is a need for more comprehensive inventories of sensitive plant species and a better understanding of the ecology of individual species." It is recommended that all plant species locally found that are listed in the 1988 California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California be added to the present list of 30 Forest Sensitive Plants.

PARTIAL INSECT SPECIES LIST

Wooly Yerba Santa, Eriodictyon tomentosum is not common in the cRNA. However, where it does occur, it was observed to attract high numbers of nectaring butterflies during May when it was in bloom. Butterflies were also conspicuous along the streams in May, less so in June. Any uncommon butterfly species observed (and some common ones) were identified or confirmed through specimens or photographs by John Lane, Director of Education at Santa Cruz City Museum, whose special expertise is in Lepidoptera. The following is a very partial list of species seen:

Adelpha bredowii	California Sister
Basilarchia lorquinii	Lorquin's Admiral
Celastrina ladon echo	Echo Blue
Coenonympha californica	California Ringlet
Danaus plexippus	Monarch Butterfly
Dasymutilla [coccineohirta]	Velvet Ant
---	Dragonfly

Euphydryas chalcedona	Chalcedon Checkerspot
Euphydryas editha editha	Edith's Checkerspot
---	Grasshopper
Junonia coenia	Buckeye Butterfly
---	Ladybird Beetle
Pepsis sp.	Tarantula Hawk
Pterourus eurymedon	Pale Tiger Swallowtail
Pterourus rutulus	Western Tiger Swallowtail
Satyrium saepium	Hedgerow Hairstreak
(possibly but less likely S. auretorum spadix)	
---	Skipper
Speyeria callippe	Callippe Fritillary
---	Sulphur Butterfly

The Euphydryas editha editha is possibly a new colony, off serpentine, that may be of interest to Paul Ehrlich and his colleagues at Stanford.

A half-grown nymphalid larva was found on Pedicularis densiflorus in June, 1989. It was most likely Euphydryas chalcedona or E. editha, but was out of season for a larva of either species.

BIRDS OBSERVED

The following birds were observed, mostly in June 1989 by Pat Pittman:

Aphelocoma coerulescens	Scrub Jay
Carduelis lawrencei	Lawrence's Goldfinch
Carduelis psaltria	Lesser Goldfinch
Carpodacus mexicanus	House Finch
Cathartes aura	Turkey Vulture
Chamaea fasciata	Wrentit
Colaptes auratus	Red-Shafted Flicker
Contopus borealis	Olive-Sided Flycatcher
Contopus sordidulus	Western Wood Peewee
Cyanocitta stelleri	Steller's Jay
Cypseloides niger	Black Swift
---	Hummingbird
Myiarchus cinerascens	Ash-Throated Flycatcher
[Oreortyx pictus]	Mountain Quail
Parus inornatus	Plain Titmouse
Pipilo erythrophthalmus	Rufous-Sided Towhee
Pipilo fuscus	Brown Towhee
Polioptila caerulea	Blue-Grey Gnatcatcher
Sayornis migricans	Black Phoebe
Sialia mexicana	Western Bluebird
Tachycineta thalassina	Violet-Green Swallow
Troglodytes aedon	House Wren
---	Woodpecker (heard drumming, not

seen)

Zenaida macroura Mourning Dove

In addition, Pat Pittman observed a family of Long-Eared Owls (Asio otus) not far from the cRNA at La Panza Campground on June 17, 1989.

OTHER WILDLIFE

A few other animals were directly or indirectly observed in the cRNA. Deer, Desert Cottontails, [Grey] Squirrels, Grey Foxes, Gopher Snakes and a Horned Lizard were seen. There is at least one Black Bear in the cRNA, and Fred Nick of the adjacent Nick Ranch reports seeing bears and cubs regularly on his ranch (pers. comm. August 23, 1989).

TIMING & EXTENT OF SURVEY

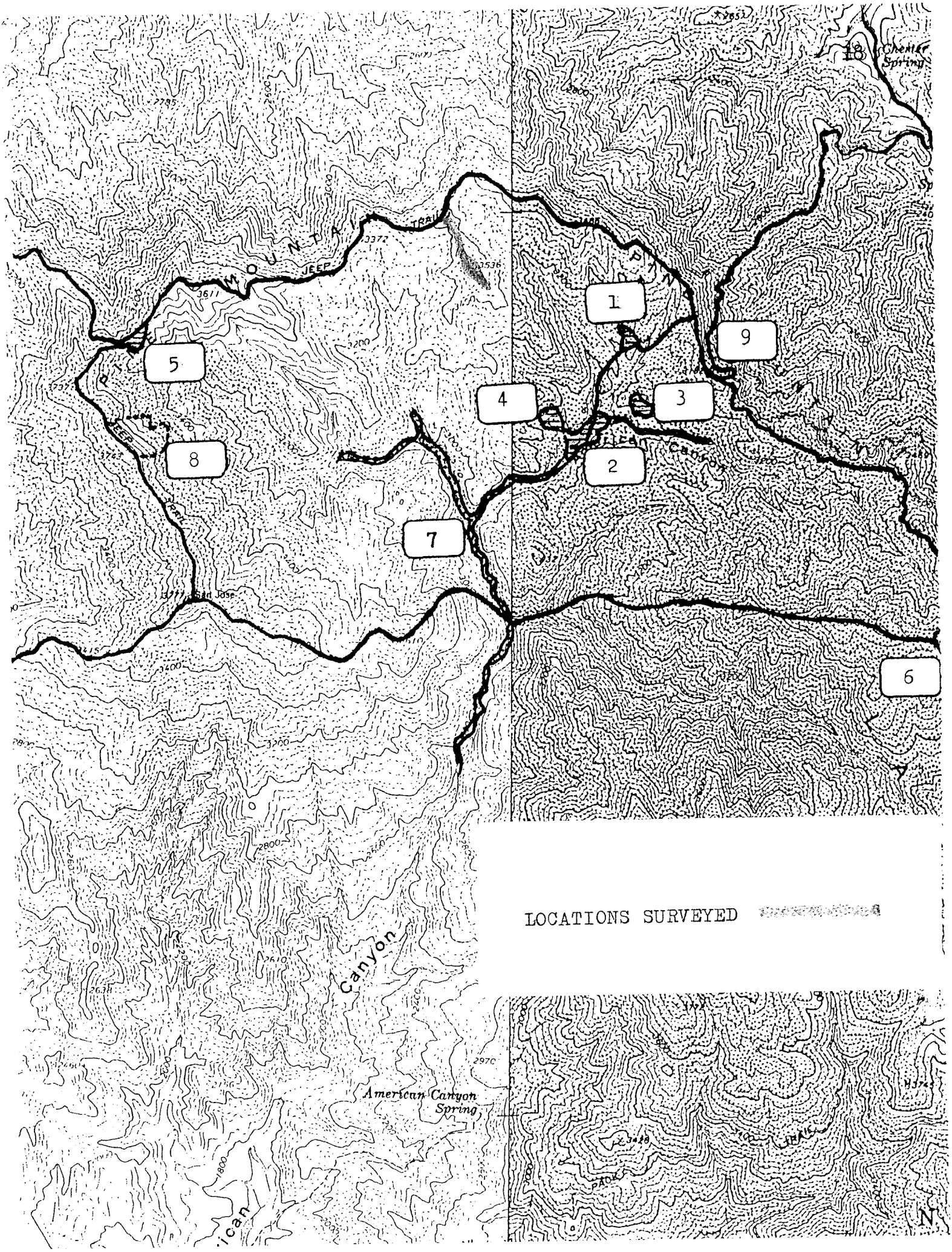
Site visits were made on May 28-29 and July 6-7, 1988 and again on May 15-16 and June 17-18, 1989. A site visit planned for April 15-16, 1989, had to be cancelled when a motorcycle race had the area closed. This visit had been planned to remedy a relative shortage of early-season observation, especially in the savanna. The survey method each time consisted of two half-day forays from a ridgetop campsite, generally following roads, trails and the streambed for access but sometimes bushwhacking into impenetrable territory. A map attached shows areas walked.

Several productive telephone contacts were made with the RNA coordinator for the Los Padres National Forest, and a half day was spent with him at the USFS office in Goleta on June 12, 1989.

GEOLOGY AND SOILS

Located now near the top of a mountain range, the geology of the cRNA had a marine origin. It consists of conglomerates, arkosic sandstones, and shales of Upper Cretaceous and Lower Tertiary origin that were uplifted along the La Panza Fault (southwest of the cRNA) during the Pleistocene epoch (Dibblee 1976).

The conglomerates would have formed a delta at one time; changing underwater channels would have deposited fines farther in changing currents and the result today is sandstone and shale interbedded with the conglomerate (D. Chipping, pers. comm. June 17, 1989). The different components are most visibly exposed


1
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LOCATIONS SURVEYED
American Canyon
Spring
Canyon
JEEP TRAIL
N

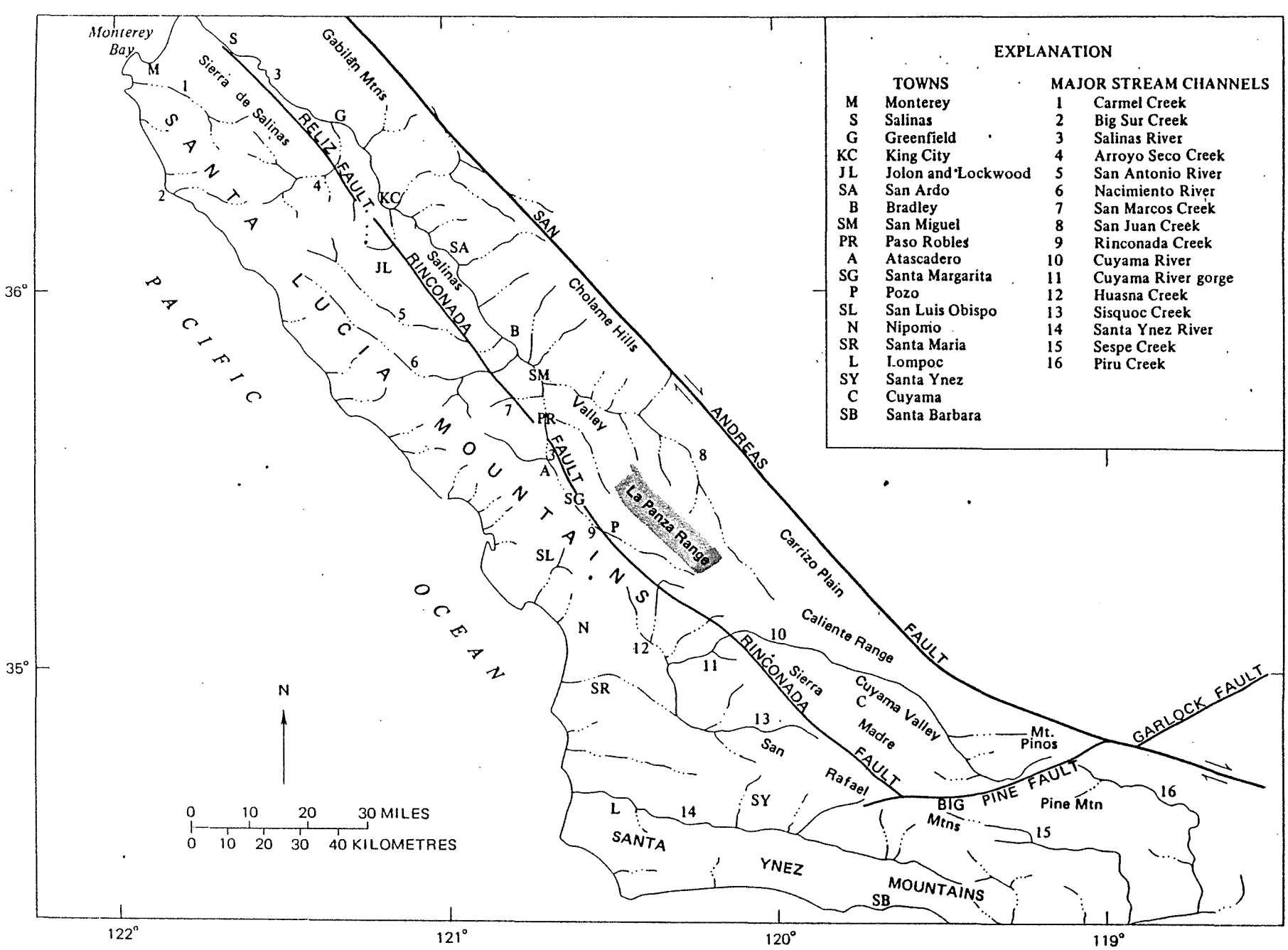
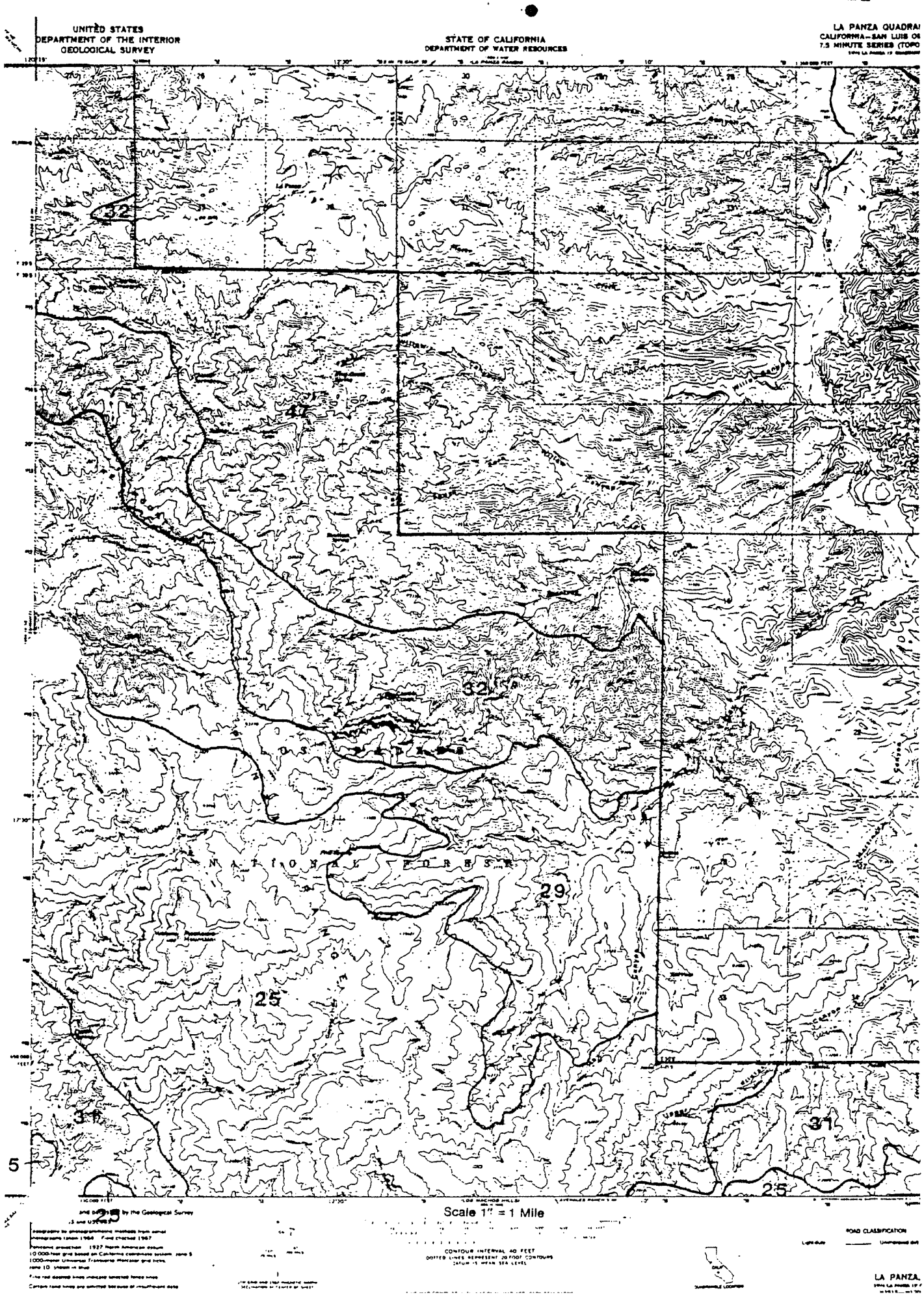


FIGURE 2.—Physiographic features and drainages along and near the Rinconada and Reliz faults.

...modified from Vedder and Brown, 1968, p. 244).


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
LA PANZA QUADRA
CALIFORNIA—SAN LUIS OB
7.5 MINUTE SERIES (TOPO
32
31
32
29
25
31
25
N A T I O N A L F O R E S T
Scale 1" = 1 Mile
CONTOUR INTERVAL 40 FEET
ROAD CLASSIFICATION
LA PANZA

29 - MILLSHOLM - EXCHEQUER - STONYFORD FAMILIES ASSOCIATION - 30 to 75 percent slopes

ELEVATION: 2100 to 5000 feet | ANNUAL PRECIPITATION: 14 to 25 inches

SOIL MAP UNIT COMPONENTS	Millsholm	Exchequer	Stonyford
APPROXIMATE PROPORTION	35 percent	20 percent	20 percent
LANDSCAPE POSITION	Mountainsides	Mountainsides	Mountainsides
SLOPE	30 to 75 percent	30 to 75 percent	30 to 75 percent
VEGETATION SERIES	Chamise, annual bromegrass, manzanita, or scrub oak	Manzanita, chamise, toyon or annual bromegrass	Chamise, manzanita, scrub oak, or annual bromegrass

SOIL PROFILE DESCRIPTION

Surface Layer	0 to 2 inches; pale brown gravelly loam; weak subangular blocky structure; slightly hard; 20 percent pebbles; pH 7.1	0 to 2 inches; brown sandy loam; moderate subangular blocky structure; slightly hard; 5 percent pebbles; pH 6.5	0 to 4 inches; grayish brown sandy loam; weak granular structure; soft; 2 percent cobbles; pH 6.0
Subsoil	2 to 14 inches; brown gravelly loam; moderate subangular blocky structure; slightly hard; 20 percent pebbles and 5 percent cobbles; pH 7.0	2 to 12 inches; light brownish yellow sandy loam massive; slightly hard; 5 percent pebbles; pH 6.5	4 to 12 inches; brownish yellow sandy clay loam; weak subangular blocky structure; soft; 5 percent pebbles and 5 percent cobbles; pH5.5
Substratum	14 inches; fractured hard siltstone	12 inches; hard sandstone	12 inches; fractured hard sandstone

INCLUDED AREAS: Included in this unit are areas of Reliz family (28), Agua Dulce family (3), Los Robles family (3), Supan family (10), and soils similar to Millerton family (25). Included areas make up about 25 percent of map unit area.

29 - MILLSHOLM - EXCHEQUER - STONYFORD FAMILIES ASSOCIATION - 30 to 75 percent slopes

SOIL PROPERTIES AND MANAGEMENT INTERPRETATIONS

SOIL MAP UNIT COMPONENTS	Millsholm	Exchequer	Stonyford
EFFECTIVE ROOTING DEPTH	shallow	very shallow	very shallow
AVAILABLE WATER CAPACITY	low to moderate	very low to low	low
WATER RETENTION CLASS	1	2	1
HYDROLOGIC SOIL GROUP	D	D	D
PERMEABILITY	moderately rapid	rapid	moderate
MAXIMUM EROSION HAZARD	very high	very high	very high
EROSION FACTOR K	0.28	0.28	0.32
DRAINAGE CLASS	well drained	well drained	well drained
SOIL MANAGEABILITY			
CLASS	3Edx	3Edx	3Edx
GROUP	III	III	III
TYPE CONVERSION CLASS	3	3	3
TOTAL PRODUCTION (LBS/AC)	1350	1300	1600
FOREST SURVEY SITE CLASS	None	None	None

REMARKS: This map unit is mostly stable with a few dry ravel slides. Some areas have up to 15 percent surface rock fragments. The bedrock is fractured at 1 to 15 inch intervals with many very fine to few medium roots within the cracks.

along the streams.

The La Panza Range is part of a block bounded by the Nacimiento Fault to the southwest and the San Andreas Fault to the northeast. It is generally younger than the rock southwest of the Nacimiento Fault (Stanford 11:242-259). There are no known earthquake faults within the cRNA. The beds dip gently south 20 degrees and strike east-west (H. Record, pers. comm. June 14, 1988).

Two figures from Dibblee (1976) illustrate the geology, faults and drainages of the area.

All of the soil within the cRNA lies within map unit 29, Millsholm-Exchequer-Stonyford Families Association, of the USDA Forest Service's Draft Soil Survey of Los Padres National Forest. Two maps and the description of the map unit are attached.

The potreros are at least partially defined by landslides, being situated on remnant soils left after slopes have sloughed off (D. Chipping, pers. comm. June 17, 1989).

CLIMATE

The cRNA was consistently hot (and buggy) on the dates visited. Nonetheless marine influence is felt. The La Panza Range is high enough to receive again half as much average precipitation from Pacific storms (21.35 inches at Pozo Station) as Paso Robles (14.22 inches). It also creates a rain shadow to the east; La Panza Ranch receives an average of 8.84 inches and the Carrizo Plain which lies east of the mountains receives on average only 6 to 8 inches (Chuck Warner, TNC reserve manager, pers. comm. Aug. 31, 1989). On the July, 1988 site visit there was overnight fog drip from the pines. Sea breezes sometimes relieve the heat.

While the principal rainfall at Paso Robles occurs from November through April, the main rainy season starts a month earlier at Pozo Station, the nearest source of rainfall data.

	Paso Robles	Pozo Station
Mean max. temp. (monthly)	60.7 - 93.9"	not available
Mean min. temp. (monthly)	31.9 - 50.1"	not available
Record max. temp.	113 deg. F.	not available
Record min. temp.	11 deg. F.	not available
Record monthly precip.	13.93" (1/69)	15.56" (2/80)

Pozo Station rainfall fluctuates widely from year to year. Rainfall for 1977-78 was almost seven times that for the preceding year. During the three current drought years 1986-89, total rainfall at Pozo was less than the average for two "normal" years combined.

Pozo Station Precipitation

Year	Total (in.)	% of Average
1971-72	13.86	64
1972-73	28.93	135
1973-74	22.51	105
1974-75	19.91	93
1975-76	14.77	69
1976-77	6.45	30
1977-78	44.37	207
1978-79	22.84	106
1979-80	31.92	149
1980-81	19.11	89
1981-82	24.49	114
1982-83	36.15	169
1983-84	17.20	80
1984-85	12.68	59
1985-86	27.90	130
1986-87	10.6	49
1987-88	17.8	83
1988-89	12.9	60

Source: Unpublished information on file at Forest Supervisor's office, Goleta, CA.

FIRE HISTORY AND MANAGEMENT

As the accompanying map shows, most of the cRNA burned in 1939. The northwest portion that did not burn in 1939 had burned in 1921. A northern area might have escaped both of these fires but burned in a small fire in 1926. Of course, within any wildfire there are pockets that burn cooler or not at all, and subsequent vegetation may be of mixed age classes.

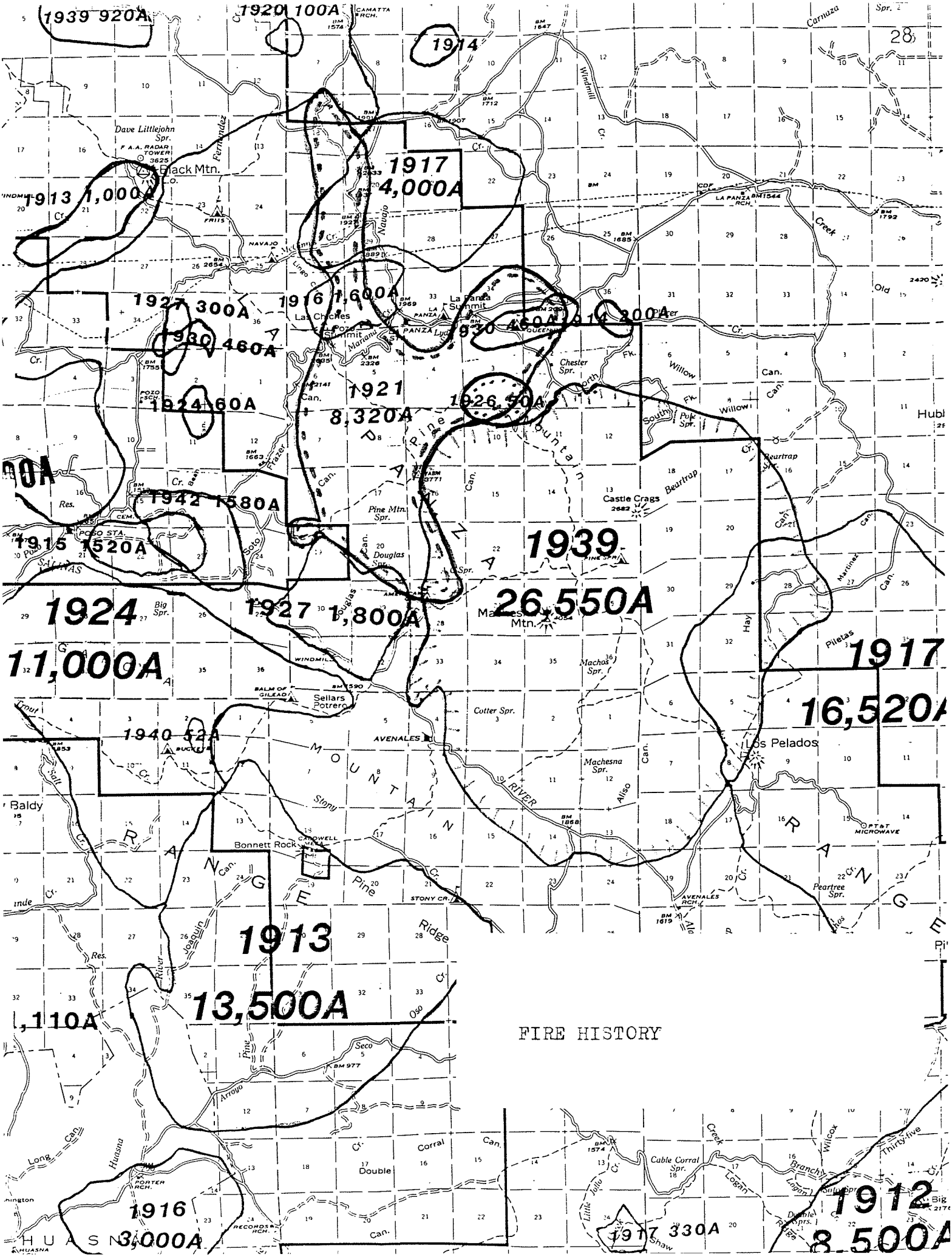
Because Coulter Pine does not self-prune, its lower branches form a continuous "ladder" for fire to reach the tree canopy from the chaparral. It is thus vulnerable to a hot chaparral fire. And the currently mature chaparral will continue to accumulate fuel until the next fire, raising the question of whether controlled burning is desirable. On the one hand, any controlled burning should be done before too many more years' fuel accumulates. On the other, it may simply not be possible to control a burn in this basin without damaging the very values which make it desirable as a RNA; also, fire would permit cattle to enter and alter areas currently inaccessible or undesirable to them.

If controlled burning is attempted, several concerns should be addressed. The area should not be seeded following either an accidental or controlled burn, in order to permit succession its full development. A healthy stand of grass will limit the ability of native tree, shrub and forb species to re-establish. For the sake of encouraging natural succession, agreements and mechanisms should be in place to keep cattle off the RNA for five or more years after any burn.

Fire management policy cannot be resolved here. It is known, however, that fire promotes new Coulter Pine (Vale 1979) and rejuvenates chaparral. The pine needs mineral soil for optimum germination, and the partly closed-cone nature of the pine in this basin means that seeds are made available by fire. Coulter Pine seedlings establish rapidly and are strongly drought-adapted; trees may begin to produce seed by 10 to 15 years (Minnich 1979). Fire renews the chaparral through stump-sprouting and by breaking seed dormancy.

Fire intervals longer than 60 years diminish species diversity in chaparral (FEIS, p. 3-11). Low fire frequency is generally thought to cause oak woodlands to give way to pine forest (Griffin 1976 and others); but Holland (1986, p. 106) suggests conversely that fire exclusion may convert oak woodlands to Coulter Pine in the Gabilan range bordering the lower Salinas Valley.

If present recreational use of the adjacent forest continues, fires are likely to occur with increased frequency. During two of the four site visits for this survey, wildfires were burning in the vinicity. (One was found to be arson, the other caused by farm equipment.) The question of achieving frequent enough


1939 920A
1920 100A
1914
1917
4,000A
1913 1,000A
Black Mtn.
1927 300A
1916 1,600A
930 460A
1924 60A
1921
8,320A
1926 50A
1942 1580A
1915 1520A
1924
11,000A
1927 1,800A
1939
26,550A
1917
16,520A
1940 522A
1913
13,500A
1,110A
1916
3,000A
1917 330A
1912
8,500A
Castle Crags
Los Pelados
Bonnett Rock
Sellars Potrero
Mariposa Mtn.
PALOMARES MOUNTAIN RANGE
FIRE HISTORY

burns may give way to suppressing fire for long enough intervals to prevent type conversion. In any event, it would be desirable to try to protect the old Coulter Pine stand in the northwest from a hot fire, in order to learn the ultimate healthy lifespan of Coulter Pine in this location. Coulter Pine is known to live for more than 104 years (Vale 1979) and some in this stand have lived for at least 155 years (Borchert 1985).

HUMAN IMPACTS

Human impacts in the cRNA are relatively light and stem from two sources, grazing and recreation. Coulter Pine is not a commercial timber tree and there has been no logging.

Cattle grazing currently has minimal impact on the cRNA. The grazing lease is held by a very conservation-minded rancher, Jim Sinton, who was a proponent of establishing the Machesna Mountain Wilderness and voluntarily grazes below USFS standards. Partly because of his conservation commitment, and partly because of the difficulty of access and the distance from water, his cattle at present make extremely light impact on the eastern savanna and no detectable impact elsewhere in the cRNA. If a fire cleared access for cattle it would be desirable to keep them outside the cRNA for five or more years during early regrowth; however, the steep and rugged terrain may itself limit cattle access as much as impenetrable chaparral now does. The lower portion of the riparian corridor is steep and boulder-filled and may not provide a cattle corridor from below. However, the upper portion of the riparian corridor, particularly near the potreros, would be highly vulnerable to cattle impact.

Human recreational impact is generally light. The first site visit was on Memorial Day Weekend; on the first day a couple of target shooters spent the afternoon near the head of trail P12/FS3 and on the second day about a dozen members of a mountain bicycle club pedalled the ridge. Mountain bicyclists were also on the ridge on June 18, 1989. No other people were seen in the area. Trail 16E01 (gated against jeeps or trucks) through the wilderness showed more signs of bicycles (or motorized bikes) in 1988 than in 1989. During a wet part of the winter of 1988-89 a vehicle drove the entire length of trail P12/FS3 and to the lower end of Potrero #2. It shed some Chevy Luv chrome insignia in the shrubbery. Unless this kind of trespass continues, the present level of recreational impact could be continued well into the future without damaging the RNA.

If Upper American Canyon is designated a Research Natural Area, and motorcycle races will continue to produce occasional closure of the area, potential researchers need to be put on advance notice of this possibility in order to plan their work

around this use.

POSSIBLE RESEARCH TOPICS

The Upper American Canyon cRNA offers excellent opportunities for research because of its relatively unspoiled condition, its floristic diversity, and its reasonable access. Numerous possible topics occur to an observer who sees mostly plants:

- Fire management of Coulter Pine.
- Regeneration of Coulter Pine.
- Recovery after natural, accidental or controlled fire.
- Non-serpentine ecology of Euphydryas editha editha.
- Water quality in the upper reaches of an ungrazed watershed. (Acid rain?)
- Why is Pedicularis densiflorus so ubiquitous beneath the chaparral plants?
- How much is diversity of chaparral species induced by mechanical (i.e. non-burning) soil disturbance?
- Taxonomy of the Arctostaphylos species and hybrids.
- Systematic rare plant search. Hoover (1970) describes the La Panza Range as one of San Luis Obispo County's centers of endemism (p. 19).

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PLATE 1. Typical Coulter Pine/Chaparral.

PLATE 2. Western half of basin from northern ridge road. Helianthus gracilentus in foreground, one of several species associated with disturbed ground.

PLATES 3 & 4. Two views inside the northern ridge line.

PLATE 5. Some ridgetop stands outside the present boundary road are dense enough to supress understory shrubs.

PLATE 6. Western half of basin from 3536' promontory near northern ridge road. Scattered pockets of dead pines.

PLATE 7. Main riparian corridor in lower portion of potrero #2, May 28, 2988. Calochortus palmeri at water's edge.

PLATE 8. Typical view of southern portion of stream, July 1988.

PLATE 9. Potrero #4 above western portion of potrero #2.

PLATE 10. Potrero #2, site of some of the largest Coulter Pines.

PLATES 11 & 12. Savanna at eastern tip of cRNA.

PLATE 13. Horned Lizard, a species whose habitat may be shrinking.

PLATE 14. Bear track at streamside.

PLATES 15 & 16. Two species that prefer disturbed soil in the Coulter Pine/Chaparral. *Phacelia suaveolens* above and *Lotus grandiflorus* below.

PLATE 17. Salvia sonomensis re-colonizing disturbed ground.

PLATE 18. The rare Malacothamnus niveus, Potrero #1.

PLATE 19. Potrero #1 seen from just above Potrero #2.

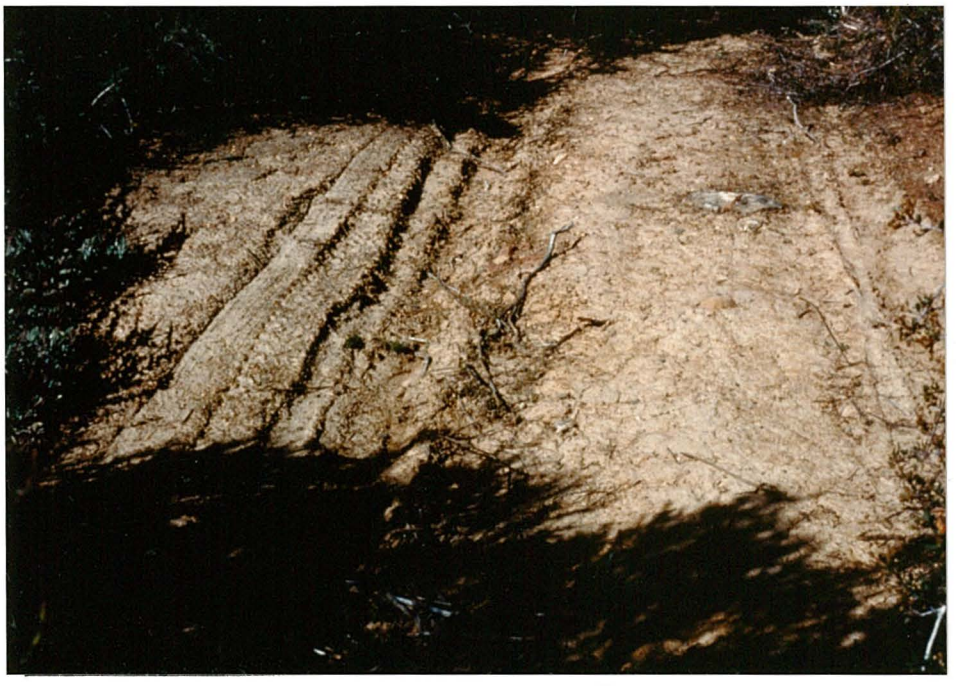

PLATE 20. Trespass through Potreros #1 and #2.

PLATE 21. Piperia elongata, found just outside the cRNA on road 30S14 and to be expected in the cRNA.

PLATE 22. The showy annual Clarkia speciosa, found in Potreros #1 and #2.

PLATES 23-26. View downstream from Potrero #3.

PLATES 27-31 are too big to scan

PLATES 32-34. View down western half of basin from Potrero #5.